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Physics\_Questions\_0014

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13. A hiker, who weighs 985 N, is strolling through the woods and crosses a small horizontal bridge. The bridge is uniform, weighs 3610 N, and rests on two concrete supports, one at each end. He stops one fifth of the way along the bridge. What is the magnitude of the force that a concrete support exerts on the bridge (a) at the near end and (b) at the far end.

5. At a certain temperature, a rod is hung from an aluminum frame, as the drawing shows. A small gap exists between the rod and the floor. The frame and rod are heated uniformly. Explain whether the rod will ever touch the floor, assuming that the rod is made from A. aluminum and B. lead

3. On the moon the surface temperature ranges from 375 K during the day to  $1.00 \times 10^2$  K at night. What are these temperatures on the (a) Celsius and (b) Fahrenheit scales

22. A steel bicycle wheel (without the rubber tire) is rotating freely with an angular speed of 18.00 rad/s. The temperature of the wheel changes from  $-100.0$  to  $+300.0$  degrees Celsius. No net external torque acts on the wheel, and the mass of the spokes is negligible (a) Does the angular speed increase or decrease as the wheel heats up? Why? (b) What is the angular speed at the higher temperature

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